

REMARKS

The present Amendment is in response to the Office Action mailed February 7, 2007. Claim 31 is cancelled and claims 1-4, 6, 13-18, 20, 28-30, 38, and 39 are amended. Claims 1-30, and 32-40 are now pending in view of the above amendments.

Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants understanding and discussion of the references, if any, is consistent with the Examiner's understanding.

Rejection Under 35 U.S.C. § 112, Second Paragraph

The Office Action rejected claims 1-3, 6, 16-17, 31 and 38 under 35 U.S.C. § 112, second paragraph for indefiniteness for failing to point out and distinctly claim the subject matter which applicant regards as the invention. In response, claims 1-3, 16-17, 31, and 38 have been amended as required by the Examiner to provide sufficient antecedent basis.

Rejection Under 35 U.S.C. § 103

The Office Action rejected claims 1-9, 11-23, 25-36 and 38-40 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,715,468 (*Budzinski*) in view of U.S. Patent No. 7,039,875 (*Khalfay*). Claims 10, 24, and 37 were rejected as being unpatentable over *Budzinski* in view of *Khalfay* and in further view of Examiner's Official Notice. Applicants traverse the Examiner's rejection for obviousness on the grounds

that the references – either individually or in combination – fail to teach or suggest each and every element of the rejected claims.

Embodiments of the invention are directed to the integration of mixed format data (e.g., the integration of unstructured data including free text with structured data). This can be achieved by extracting attributes from free text and then integrating those attributes with structured data of a database. The process includes a linguistic parse of the free text and may also include the identification of thematic roles from the linguistic parse. The claims have been amended to clarify the relationship between syntactic roles identified in a linguistic parse and thematic roles that are identified from the linguistic parse.

For example, claim 1 has been amended to clarify that linguistically parsing the identified text records generates a linguistic parse that includes syntactic roles. Syntactic roles, as noted in the specification, typically include the grammatical function of words and phrases beyond simple part-of-speech, e.g. subjects, direct objects, and indirect objects. Claim 1 then requires identifying thematic roles and relationships based in part on the syntactic roles. Identifying the thematic roles and relationships maps the syntactic roles including the grammatical information into a smaller set of categories for each grammatical permutation of the identified text records.

More specifically, syntactic roles for semantically similar pieces of text can vary significantly. For example, the following sentences have different syntactic roles for “Jane,” “John,” and “bananas”

- (1) Jane was given some bananas by John;
- (2) John gave Jane some bananas; and
- (3) Some bananas were given to Jane by John.

In (1), Jane is the subject, but in (2) she is the direct object, and in (3) she is the direct object.

From a thematic role point-of-view, though, Jane is playing the role of recipient in all three cases. Continuing the example, in all three cases, John is the actor – he is the

one performing the act of giving – and bananas represent the object – they experienced the act of giving without being a participant who performed or received the action. By mapping multiple syntactic variations to a single set of thematic roles, fewer caseframes are needed. Consider the following.

- (4) <subj> <verb:give, passive> <direct object> <prep phrase:by>
- (5) <subj> <verb:give, active> <indirect object> <direct object>
- (6) <subj> <verb:give passive> <indirect object> <prep phrase:by>

Three different syntactic role patterns are necessary to cover (1) (2) and (3). A single thematic role-based caseframe, however, covers the three cases:

- (7) actor action:give object recipient

This illustrates one example of how the identification of thematic roles and relationships maps the syntactic roles including the grammatical information into a smaller set of categories for each grammatical permutation of the identified text record as required by claim 1. This example further illustrates that thematic roles can establish relationships between an action and between portions of the free text, as is required by claim 28 for instance.

The cited art fails to teach these elements of claim 1, among others. *Budzinski*, for example, is primarily directed to a memory system for storing and retrieving experience and knowledge with natural language. *Budzinski* is cited as teaching identifying thematic roles and relationships within the parsed text records. Applicant respectfully disagrees.

Budzinski suggests a syntactic method that includes steps of word isolation, dictionary look-up, function word processing, morphological processing, pattern recognition parsing, and ellipsis processing. See col. 4, lls. 60-63. However, a further review of these steps suggests that *Budzinski* is not teaching the identification of thematic roles and relationships as required by claim 1.

For example, word isolation identifies numerics, words, punctuation, and base words with inflections or affixes. See col. 5, lls. 4-6. Dictionary look up looks up the

syntax wordsets which each input word belongs to and passes this information to the parsing step, which utilizes syntax trees. See col. 5, lls. 10-14. Morphological processing included the identification of the group of functions associated with a morphological word's base word, prefixes and suffixes; and the evaluation of one of these functions. See col. 5, lls. 51-55.

These steps taught by *Budzinski* relate to the syntax of the text, but fail to teach or suggest identifying thematic roles and relationships as required by claim 1. More specifically, claim 1 has been amended to clarify that the ability to integrated mixed format data is achieved using both syntactic roles and thematic roles. The teachings of *Budzinski* relate to the syntax of the text. However, processing the syntax as taught by *Budzinski* fails to teach or suggest both syntactic roles and thematic roles and relationships as required by claim 1.

Khalfay fails to remedy these deficiencies. For at least these reasons, Applicant respectfully submits that claim 1 is patentable over the cited art.

Claim 15 has been amended to clarify the difference between a linguistic parse and thematic roles. As discussed above, *Budzinski* fails to address both syntactic roles and thematic roles and relationships. Further, claim 15 clarifies that the thematic roles can be used to identify relationships existing in the free text. While a linguistic parse may include syntactic roles such as subject, direct object, etc., a thematic role may identify a relationship between an action in the text records and one or more of an actor, object, recipient, experiencer, etc.

With reference to the above example, which is repeated here, the following sentences have different syntactic roles for "Jane," "John," and "bananas"

- (1) Jane was given some bananas by John;
- (2) John gave Jane some bananas; and
- (3) Some bananas were given to Jane by John.

In (1), Jane is the subject, but in (2) she is the direct object, and in (3) she is the direct object.

From a thematic role point-of-view, though, Jane is playing the role of recipient in all three cases. Continuing the example, in all three cases, John is the actor – he is the one performing the act of giving – and bananas represent the object – they experienced the act of giving without being a participant who performed or received the action.

This illustrates one example, as required by claim 15, of how thematic roles and relationships can be used to remove certain grammatical information and, as required by claim 1, map the syntactic roles to a smaller set of categories for each grammatical permutation of the identified text records.

One advantage of a thematic role is that it can simplify the application of caseframes because some of the grammatical information in the syntactic roles has been removed.

As discussed above, *Budzinski* fails to teach identifying thematic roles and relationships as recited in claim 15 and *Khalfay* fails to remedy these deficiencies. Applicant respectfully submits that claim 15 is therefore patentable over the cited art.

Claim 28 has been similarly amended to clarify that linguistically parsing the free text identifies syntactic roles and that the thematic roles and relationships establish a relationship between a portion of the free text and at least one action included in the free text.. As discussed herein, *Budzinski* fails to teach or suggest this aspect of claim 28, among others.

Khalfay has not been shown to teach or suggest the claims as presented by these amendments and fails to remedy the deficiency of *Budzinski* as discussed herein. Applicant does not, however, admit to the purported teaches of *Khalfay* as advanced by the Examiner.

For at least these reasons, Applicants respectfully submit that claims 1, 15, and 28 are patentable over the cited art. The dependent claims rejected under § 103 are patentable for at least the same reasons.

Because claims 1, 15, and 28 are in condition for allowance as discussed above, claims 10, 23, and 36 are patentable for at least the same reasons.

Conclusion

In view of the foregoing, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 8th day of February, 2008.

Respectfully submitted,

/Carl T. Reed/ Reg. # 45454

CARL T. REED

Registration No. 45,454

Attorney for Applicant

Customer No. 022913

Telephone No. 801.533.9800

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